Jl S. Afr. Bot. 45 (2): 227–229 (1979)

BOOK REVIEWS

GRASSLAND SIMULATION MODEL, Ecological Studies 26, edited by G. S. Innes with pp. 298 + xxvi, 87 figures and 44 tables. Berlin-Heidelberg-New York, Springer Verlag, 1978. DM 49,60.

This book is bound with a hard cover of convenient size (165 × 240 mm). The text appears to have been typed and reproduced photographically on a good quality white glossy paper and is clear and easy to read. Different type sizes have been employed without creating an imbalanced effect. Italics have been used for the scientific names and mathematical formulae.

Except for the occasional use of abbreviations in the text such as mo. and yr. instead of month and year there is little fault to be found with the accuracy of the text. The term bar instead of kPa as a unit for waterpotential has also been used.

A list of contributors responsible for the text is given in the preliminary pages of the book. Each chapter contains an abstract, introduction, conclusion and discussion, acknowledgements and a list of references. In the first chapter a clear view of the objectives and structure for a grassland simulation model is given. Each chapter deals with a subsection of an ecosystem and the results are used to compose a grassland ecosystem model.

The global objective of this research and modelling activity was to develop a total system model of the biomass dynamics of a grassland, representative of grassland in the United States of America. This book gives a clear indication of the extent and problems of such a modelling activity. In the last chapter a critical evaluation and analysis of the grassland ecosystem model is given.

The model presented combines hypotheses in a manner that facilitates comparison of results to data and thereby tests the hypotheses. Areas where knowledge about the ecosystem is inadequate are identified and can be investigated experimentally.

There is an abundance of illustrative material. The drawings are well done and clear, as are the diagrams. The photographs are chosen to give an idea of the research sites, but are unfortunately too dark to give a clear indication of the vegetation and the research site as a whole.

There are enough references in the text and those given are to the point under discussion. There is a comprehensive list of references at the end of each chapter which is extremely useful to the reader.

The index is comprehensive and detailed and a subject and author index is given at the back of the book.

The book is aimed primarily at teachers of ecosystem ecology, but would be very useful for postgraduate students. It is not suitable for the unaided undergraduate student. The research worker will find much in it, as well as pasture science research workers and extension officers dealing with farm planning and management.

The information given in this book could be applicable to South African conditions.

The book is not a textbook in the normally accepted sense. It is intended to give a review of the facts and problems about a grassland ecosystem model and research to be done to put forward such a grassland simulation model.

Despite minor shortcomings it is a highly interesting book and recommended to ecologists.

W. L. J. VAN RENSBURG

INCOMPATIBILITY IN ANGIOSPERMS, by D. de Nettancourt, with pp. xiii, 230 + 45 figures and 18 tables. ISBN 3-540-08112-7. Berlin, Heidelberg, New York: Springer-Verlag, 1977. Volume 3 in the series "Monographs on Theoretical and Applied Genetics", co-ordinating editor R. Frankel. Cloth DM 56, US$ 24.70.

One might be excused for expecting a book with the title *Incompatibility in Angiosperms* to be a rather dry reference book destined to gather dust on a top shelf. Quite the contrary. This third in the series on Theoretical and Applied Genetics proved to be a very readable and attractive presentation of a complex subject.

The need for discrimination between self and non-self is very basic to living organisms of all types. The restriction enzymes of bacteria, that are proving so useful to molecular biologists, probably evolved to meet this need as did the very involved immune systems and many complex behavioural mating patterns of higher animals. Such recognition systems serve as the first step in the defence against invasion by parasites as well as assuring that fertilization occurs only between gametes of the same or very similar species.

Many higher plants have also evolved systems which seem to work in the reverse direction, preventing self-fertilization. It is the genetic systems involved in the inherited ability of a flower to reject its own pollen that forms the subject of this book.

The field covered is a very extensive one extending over more than 200 years and the author is to be congratulated for organising the material into a very readable whole. The basic features of self-incompatibility are discussed in chapter one. Further chapters consider the genetic basis of self-incompatibility, morphology and biochemistry of the self-incompatibility reaction, modifications and mutation of the systems, interspecific incompatibility and finally a most stimulating chapter on incompatibility in basic and applied researches. The book should be of interest to Botanists, Plant Breeders, Evolutionists, Geneticists and Plant Biochemists. It is well indexed and the References contain over 500 entries.

The history of the study of the phenomenon of self-incompatibility reflects general development in biology as a whole—first observation and description, followed in this century by recognition of genetic control and study of the inheritance patterns involved. Biochemical studies and such techniques as electron microscopy followed and finally the most sophisticated techniques of modern molecular biology are being brought to bear on the study. The excitement of the pursuit of understanding of complex phenomena is well captured in this monograph.

NANCY VAN SCHAIK

THE BIOLOGY OF LICHENS, by Mason E. Hale, with pp. viii, 181 + 134 illustrations. 2nd edition. London: Edward Arnold, 1974. Contemporary Biology series. £5,50 (hard cover), £2,75 (paper back).

The first edition of this book (1967) was hailed by one of the most competent reviewers with the words: "This is a good book." Of the second edition one could say: This is an improvement of a good book! There are several changes in the text which take into account recent literature and bring the book up to date. The number of pages of text is the same, there is an increase of 3 pages in the bibliography and index which is set in a clearer type. The reference numbers have not been changed but new references are indicated by letters after the number. This is (for a textbook) a recommendable practice. A number of illustrations have been replaced by clearer ones and the printing of some of the half-tone illustrations seems to be better than in the first edition. But the character of the book has not changed, it is an excellent introduction to the Lichens for the general botanist and especially valuable for ecologists and non-specialist students of the environment.

Lichens form an extremely interesting group of organisms that can be studied from numerous angles. On the other hand the study of Lichens has contributed to other fields such as physiology (symbiosis), phytochemistry and ecology. I feel that Lichens are still rather neglected in the training of botanists so that very few people really know much about Lichens, and hardly see them in the field. The fact that Lichen taxonomy is very difficult (are there really as many as 15 000 "species"?), and that there are too few Lichen specialists in the world (no one, as far as I know, in South Africa) may have contributed to this situation. But in order to appreciate the importance of Lichens in nature and in science, a general knowledge of some of the more conspicuous forms should be helpful and could lead to increased interest. Hale's book should be an excellent guide. I consider it the most important basic text in English.

W. J. LÜTJEHARMS

ANNOUNCEMENT

FASCICLES OF FLORA OF INDIA

The Botanical Survey of India announces publication of the first Fascicle of Flora of India. Copies are obtainable from the office of The Director, Botanical Survey of India, P.O. Botanic Garden, Howrah – 711103, India.